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EDITORIAL

Premarital HIV screening in Saudi Arabia, is antenatal next?

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On 1/1/1429 H (10 January 2008), screening for human immunodeficiency virus-1 (HIV) became mandatory for both-to-be husband and wife in Saudi Arabia as a prerequisite for issuing marriage certificate. This is part of a national project spearheaded by Ministry of Health named the ''Healthy Marriage Program''. The program started as a screening program for hemoglobinopathies; specifically sickle cell and thalassemias in 2004. In 2008, viral pathogen screening was added for HIV, hepatitis B and C viruses. The aim of including HIV is to prevent transmission of the virus to the newly married wives, as reports have indicated that 97% of heterosexually infected women in Saudi Arabia acquired the virus from their husbands [1]. It is estimated that around 300,000 persons will be screened annually in this program. Initial data from the results of screening for hemoglobinopathies point to significant regional differences, potential high-risk marriage was identified among 2.1% of the screened future spouses, and proceeding with the marriage in spite of high-risk in 86% of identified couples [2]. A comprehensive network of reception centers, counseling clinics, and laboratories were set in place. The initial implementation of the program was considered smooth, with excellent access to target population and heavy toll on personnel and financial resources of the reception centers and laboratories [2]. No cost-effectiveness analysis was performed. Adding the screening step for viral pathogens was considered relatively easy from the aspects of finding the targeted population and laboratory logistics of collection and transportation, as the process was already established for almost 4 years. However, the addition of pre- and post-test counseling, laboratory quality controls, interpreting positive results and confirmatory tests, referral for evaluation and treatment, acceptance of the community, impact on marriage projects, and finally confidentiality and stigma are tremendously important and new issues for viral pathogen screening compared to hemoglobinopathies. Training workshops and preparation of reception centers have been in process for several months before launching the program early-2008 [3]. The inauguration of the project was accompanied by massive campaign in local media and newspapers, holding forums for educating and informing the public, and establishing a dedicated web-site [4]. The monitoring, reporting, and public access to program activities and reports are excellent [4]. The implementation of premarital HIV screening was

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preceded by a persistent, well-orchestrated efforts of preparing the public, legislating councils, and the providers. Annual AIDS-day events have included graphic and moving stories of recent marriages that ended by an infected new wife and a failure to thrive HIV-infected newborn [5]. In the midst of such activities, no mention of the lost chance of antenatal screening for HIV.

The premarital HIV screening program in its first year, has identified 75 confirmed cases of HIV infection out of 288,718 screened persons, a prevalence rate of 0.026% among all persons screened [6]. Almost all of them were men from Riyadh and Jeddah, the largest two urban populations, who were not aware of their serostatus (personal communication, Dr. K. Al-Talhi, Program Director, National AIDS Control Program, Ministry of Health, Saudi Arabia). Estimates for the prevalence of HIV-positive population in Saudi Arabia by the UNAIDS have been for less than 0.2% [7]. Because the majority of identified HIV-infected persons through the premarital screening program are men, the prevalence of HIV infection among men planning marriage could be close to 0.05%. The risk of HIV infection among unmarried girls is almost zero. For unmarried young men, the rate is extremely concerning. It indicates a risk and active transmission higher and at an earlier age than previously suspected [8]. It also raises the alarm of even higher risk of HIV acquisition postmaritally. Data are desperately needed from this program on profiles of the sero-positive men, risk behaviors, and acquisition routes. Such information is imperative to design and implement education and prevention programs to the most vulnerable. The premarital screening program could also serve as a chance to educate the HIV-negative population about HIV to reduce the risks of acquiring the virus after marriage. Currently, no data are available on the possible timing of acquiring HIV for the first infected spouse among infected couples whether it occurred before or after the marriage. Therefore, the post-marital component of the HIV screening program could be performed through antenatal HIV screening.

Prevention of mother-to-child (perinatal) transmission of HIV was one of the early priorities in the HIV epidemic. Screening pregnant women for HIV has been a recommendation very early in the epidemic [9]. Revisions have followed through, and universal screening of all pregnant women for HIV has also been recommended [10]. Although prevalence rates of HIV in Saudi Arabia remain relatively low [8] and other sexually transmitted infections are low [11], preventing one case of perinatal transmission of HIV through screening and therapy is worth the efforts. It is likely that antenatal HIV screening would discover more HIV infected ''couples'' than the premarital program. Reasons include a larger pool of targeted population, a probable higher risk of HIV exposure, and longer ''time'' factor for sexual activity. In fact, judging from early perinatal HIV transmission studies, only one out of four infected mothers transmit HIV to the newborn [12]. Consequently, for every infected newborn, there are three other newborns who escape HIV transmission from their infected mothers. As there are around 150 HIV-infected newborns by end of 2007 in Saudi Arabia (5% of the reported HIV population [13]), and assuming that mothers got pregnant only once, there are at least 450 undiagnosed HIV-infected child-bearing women in Saudi Arabia. To identify those infected mothers, universal screening for HIV in all pregnant women in Saudi Arabia needs to be established. During the *Hijra* year of 1427 (approximately 2006), birth certificates were issued for 355,330 newborns in Saudi Arabia. The total public health sector live births were 326,356. Of those, 246,615 live births were in MOH facilities and 79,741 live births in other public sector hospitals [14]. Screening for HIV in all pregnant women should be considered now because of the extremely high sensitivity and specificity of the current diagnostic tests, and the availability of rapid HIV testing that has dramatically improved the diagnostic process, making it inexpensive, fast, and easy to use. Additionally and most importantly, because highly effective preventive therapy is available. Local data from Saudi Arabia point to high mother-to-child transmission of HIV when the pregnant woman was not diagnosed HIV-positive (almost 100%) [15], but when the pregnant women were diagnosed HIV-positive and received care and antiretroviral therapy, transmission is almost zero [16].

There is no doubt, that the implementation of premarital HIV screening is an ambitious and massive project on scales of cost and impact. Antenatal HIV screening is also as indicated and justified as premarital screening. Furthermore, antenatal HIV screening will be more difficult to apply comprehensively, as antenatal care is not sought by all pregnant women, and compliance and enforcement of screening requirements cannot be achieved similar to premarital HIV screening. The subsequent intervention of antiretroviral therapy for pregnant HIV-infected mothers, and newborns will be demanding, requiring logistics and trained qualified personnel that may not be available swiftly. A network of referral centers to provide perinatal care and therapy are essential for the program to attain its goals of preventing mother-to-child HIV transmission. It is expected that remote areas and local

health care facilities may not be able to screen all pregnant women for HIV, but these areas are still very low risk. Inferring from premarital HIV screening, large urban populations may still be the source of the majority of HIV-infected pregnant women identified through a screening program. For these settings, antenatal HIV screening may not be as difficult to apply and implement, if we have the well to eliminate this source of HIV transmission.

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